Operating Instructions

Panasonic

HI-FI COMPONENTS

Panasonic

Simulated wood base

Frequency Generator Servo Turntable
Auto-return mechanism

MODEL **RD-3600**

Read these instructions completely before operating this unit.

Thank you for selecting the RD-3600, FREQUENCY GENERATOR SERVO TURNTABLE.
To help you obtain the maximum performance from this unit, we recommend that you read these instructions carefully.

PARTS IDENTIFICATION

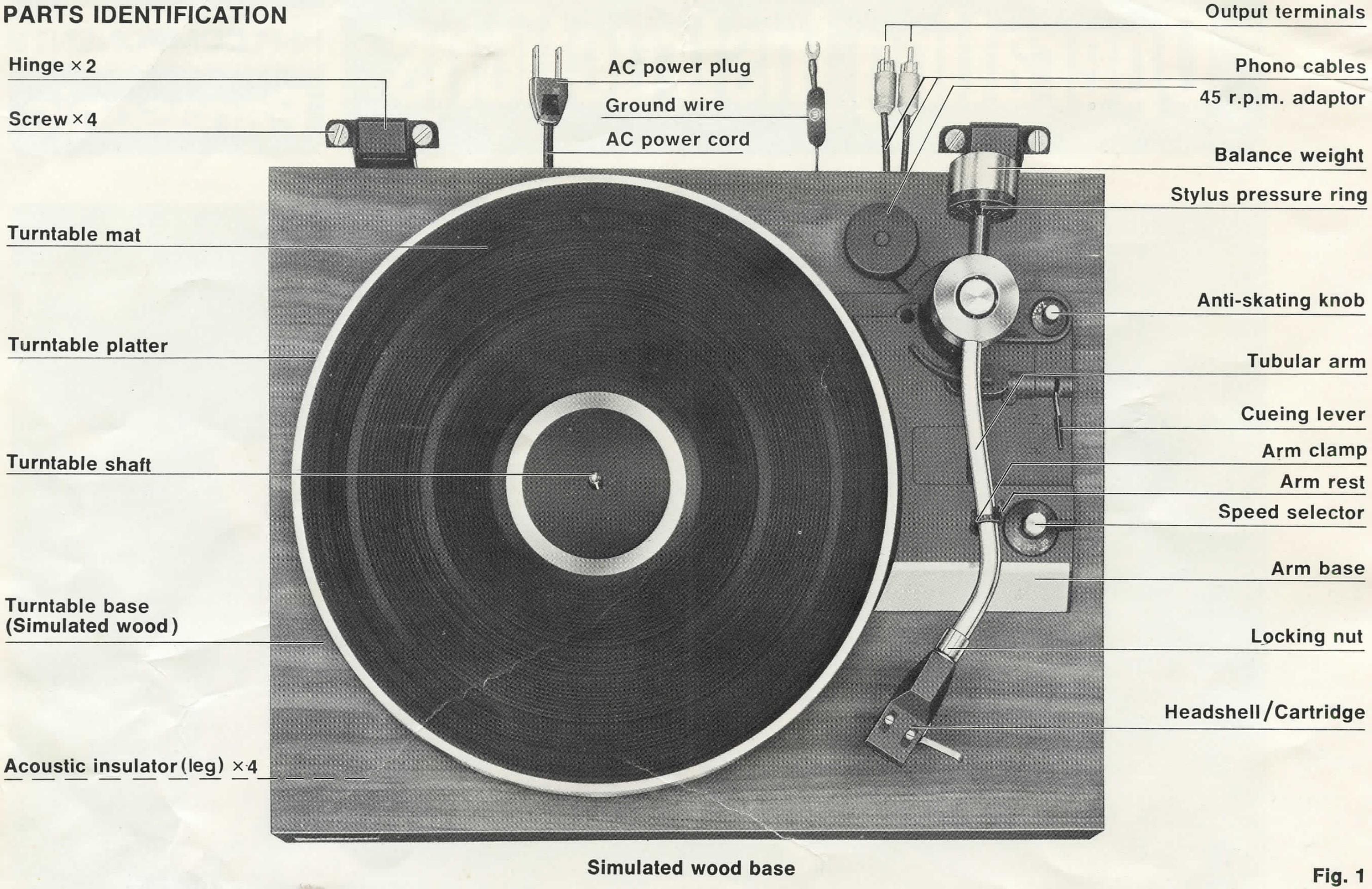


Fig. 1

BEFORE USE

❶CHECK TO MAKE SURE YOUR TURNTABLE IS PACKAGED AS PER THE LIST BELOW.

Turntable unit 1
Dust cover.....................1
Turntable platter 1
Turntable mat 1
Parts box 1
Headshell with cartridge ..1
Balance weight 1
45 r.p.m. adaptor 1

❷REMOVE THE TRANSIT SCREWS, SPACERS AND PACKING MATERIAL

We recommend that you keep these items for future use, when the unit must again be transported. (See Fig. 2.)

NOTE:
DO NOT CONNECT THE AC POWER PLUG UNTIL THE ASSEMBLY HAS BEEN COMPLETED!

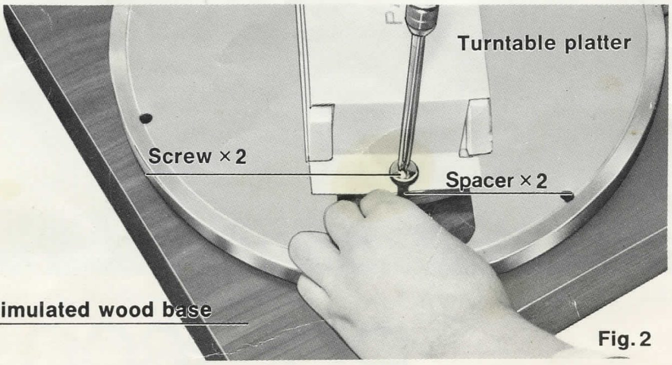


Fig. 2

ASSEMBLY AND SET-UP

❶PLACE THE TURNTABLE MAT ON THE PLATTER

NOTE:
In rare cases the automatic mechanism may have engaged the tonearm gear, or moved out of its normal position during transportation. In such a case we recommend that you move the tonearm toward the center of the platter (turntable shaft), rotate the turntable platter manually about 10 times to engage the return mechanism, and let the arm return to its rest position.

❷INSTALLATION OF THE HEADSHELL AND BALANCE WEIGHT

Remove the stylus cover. (See Fig. 3)
Insert the headshell in the end of the tubular arm, and tighten it by turning the locking nut. (See Fig. 4)

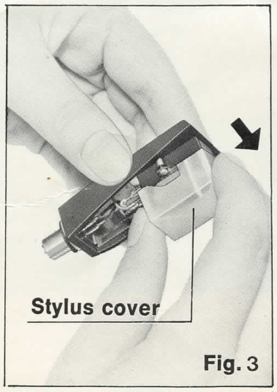


Fig. 3

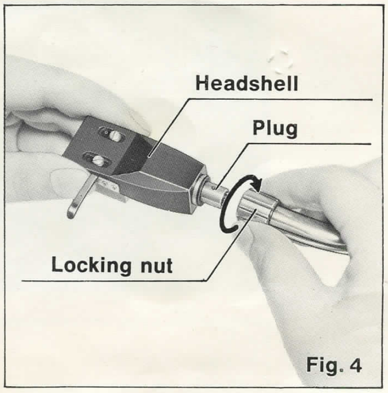


Fig. 4

"WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE."

Insert the balance weight on the rear shaft of the tonearm, with the numbers facing the front of the turntable. (See Fig. 5.)

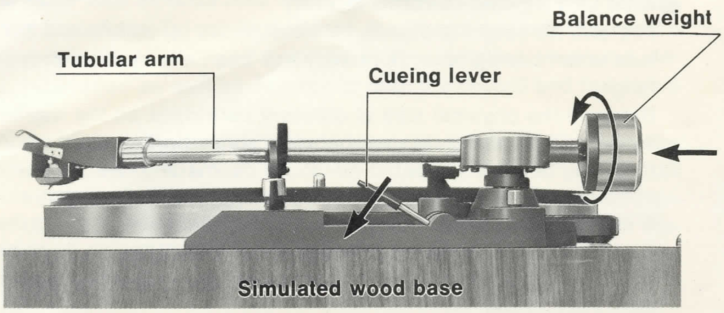


Fig. 5

❸ADJUSTMENT OF THE HORIZONTAL "0" BALANCE

Lower the cueing lever. (See Fig. 5.)

Release the arm clamp (Fig. 6.), and turn the entire balance weight forward or backward until the tonearm is approximately balanced (floats freely). In this condition, stylus pressure is "0". (See Fig. 5.)

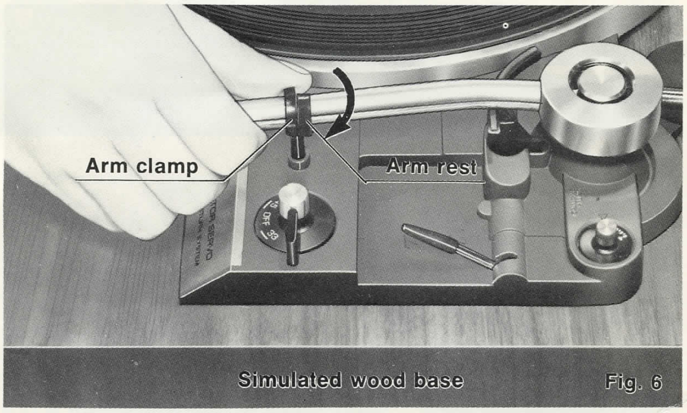


Fig. 6

After the arm is horizontally balanced, rotate only the stylus pressure ring, so that the "0" lines up with the center line of the rear shaft. (See Fig. 7.)
Do not move the balance weight during this adjustment.

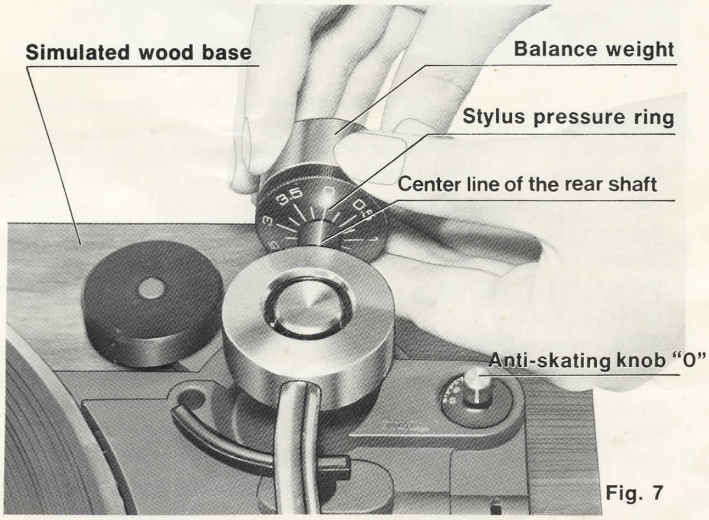


Fig. 7

NOTE:
Before adjustment of the "0" balance, make sure the anti-skating knob is set at the "0" position. (See Fig. 7.)

❹ADD THE STYLUS PRESSURE AND THE ANTI-SKATING FORCE VALUE

After adjusting the horizontal balance, turn only the balance weight to the arrow direction as shown in Fig. 8 until the stylus pressure ring indicates "1.75". (See Fig. 8.)
The stylus pressure ring moves in step with the balance weight so that, if you turn the balance weight, the stylus pressure ring moves with it.

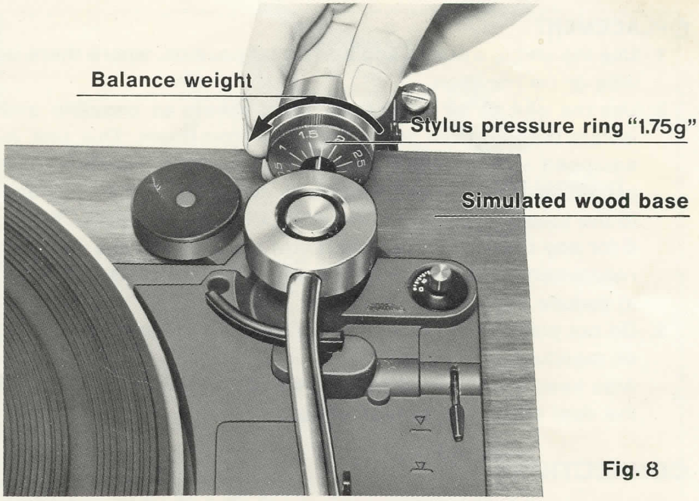


Fig. 8

NOTE:
When the recording level of the disc is very high or the unit is exposed to vibration, increase the stylus pressure to 2.0 g.

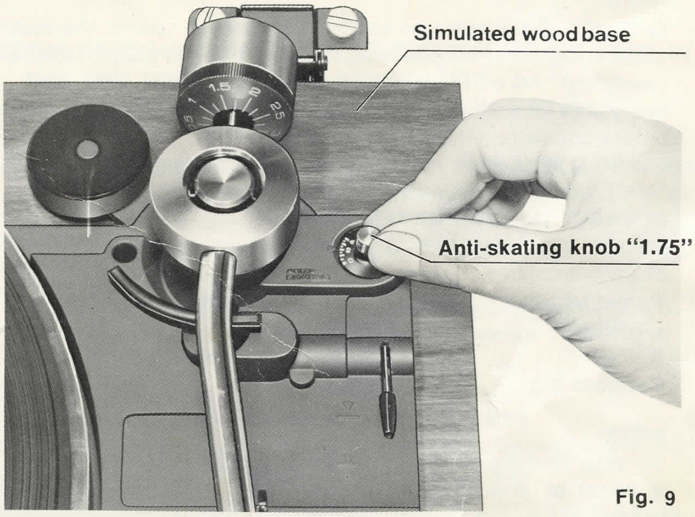


Fig. 9

Set the anti-skating knob to the same value as the stylus pressure. (See Fig. 9.)

❺INSTALLATION OF THE DUST COVER

Loosen the screws and install the dust cover between the screws and hinges.
Re-tighten the screws securely. (See Fig. 10.)

NOTE:
In rare cases the dust cover may become the cause of **"HOWLING"** from speaker vibrations. In such a case we recommend that you remove the dust cover during playing.

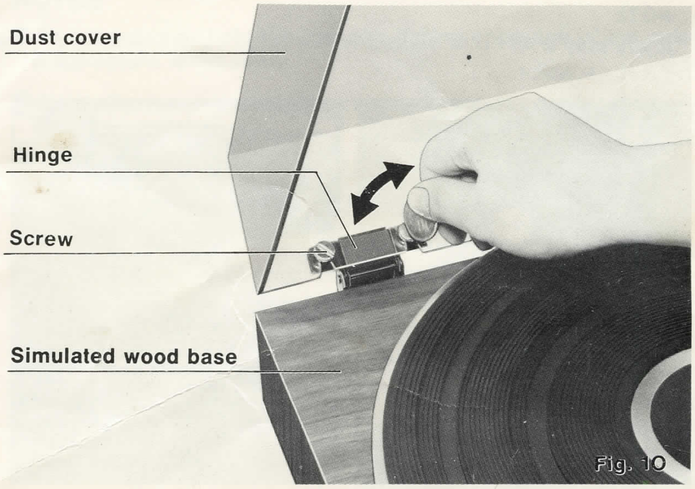


Fig. 10

⑥PLACEMENT

1. Use the unit in a stable and horizontal position, where there is little or no vibration.
2. Use the unit as far away from the speakers as possible and isolate the unit from sound radiation from them. This unit is equipped with acoustic insulators but if the speakers are placed too near the unit, vibrations may be transmitted directly to the tonearm, resulting in "HOWLING" or "FEEDBACK".
   If for any reason, the speakers are placed near the unit, we recommend that you place felt under the speakers or the unit to reduce the sound vibrations.
3. Do not place the unit where it is exposed to direct sun. dust or moisture.
   Also keep it away from heating equipment in order to protect the dust cover and turntable base.

CONNECTIONS

CONNECT THE AC POWER PLUG

CAUTION

Connect the AC power plug to the AC wall socket or AC outlet of your amplifier.

NOTE:

Since the speed selector and tonearm switch control the motor and not the main AC power, plug the AC power plug into the "switched" AC outlet on your receiver of amplifier.

Make sure that the AC line voltage is correct to your local voltage before connecting the AC power plug.

(120V AC 50 or 60 Hz)

Never connect to a DC power socket.

CONNECT THE OUTPUT TERMINALS

Connect the output terminals to the corresponding channels of your amplifier.

Output terminal			Amplifier
L (White)	⟶	L	Channel
R (Red)	⟶	R	Channel
E (Spade lug)	⟶	GND	

NOTE:

Be sure to connect the turntable ground wire to the ground terminal of your receiver or amplifier to eliminate possible "HUM".

HOW TO PLAY

①Set the speed selector to the desired record speed. (See Fig. 11.)

②Remove the stylus cover. (Refer Fig. 3.)

③Raise the cueing lever to the ▼ position (Fig. 12) and place the tonearm over the lead-in groove or over any other groove, and then lower the cueing lever to the ▼ position.

④The tonearm will descend slowly onto the record and begin playing.
When playing has finished, the tonearm returns to its rest automatically.

NOTE:

If you play a 45 r.p.m. record with a large center hole, use the 45 r.p.m. adaptor.

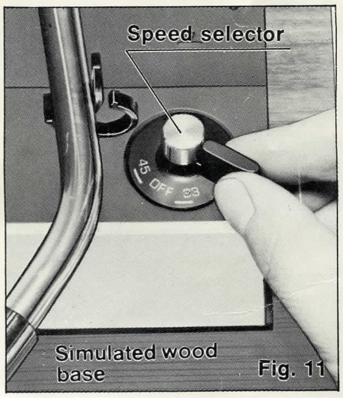


Fig. 11

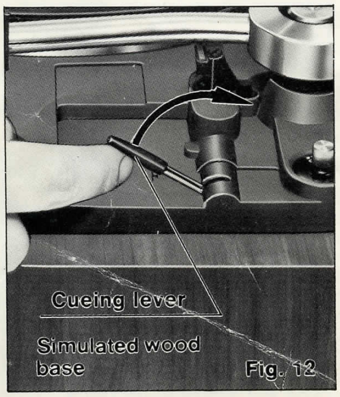


Fig. 12

ADJUSTMENTS

①ARM LIFT HEIGHT (CUEING LEVER)

The arm lift height (distance between stylus tip and record surface when cueing lever is raised) has been adjusted for proper height.

Because the physical size of different cartridges on the market varies widely, the clearance between stylus tip and record surface may become too narrow or too wide, making re-adjustment necessary. To adjust for a different cartridge, push down manually on the arm lift bar to expose the adjustment screw, and turn the screw clockwise (to lower the arm) or counterclockwise (to raise the arm) until the arm lift height measures about 10 mm (25/64"). (See Figs. 13 and 14.)

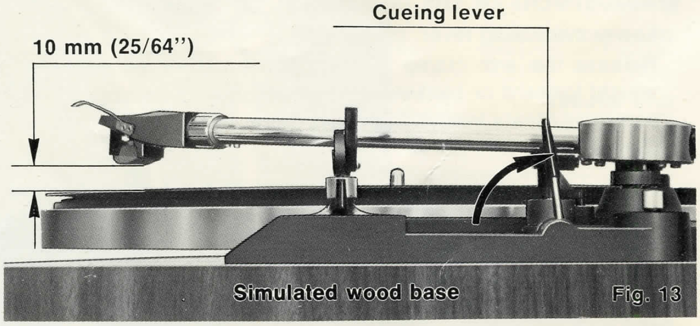


Fig. 13

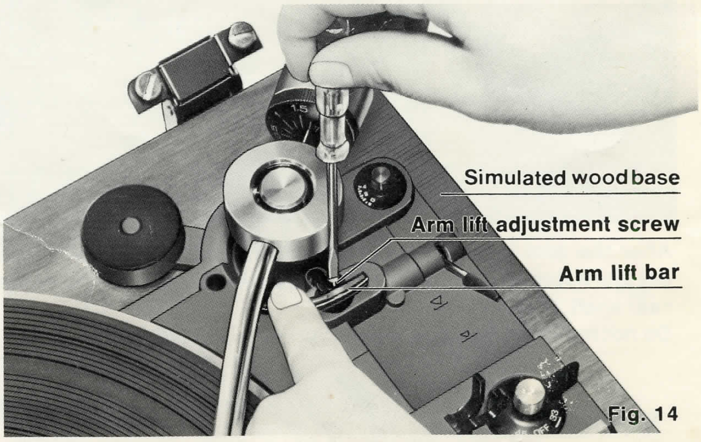


Fig. 14

②TONEARM RETURN POINT

In some cases, the tonearm will tend to return to its rest position before playing has finished. In other cases, it may fail to return to the rest position even after playing the last groove of the record.

Rotate this screw to correct for either condition. (See Fig. 15.)

If the tonearm returns to its rest too soon.—Turn this screw counterclockwise.

If the tonearm does not return to its rest even after playing the last groove.—Turn this screw clockwise.

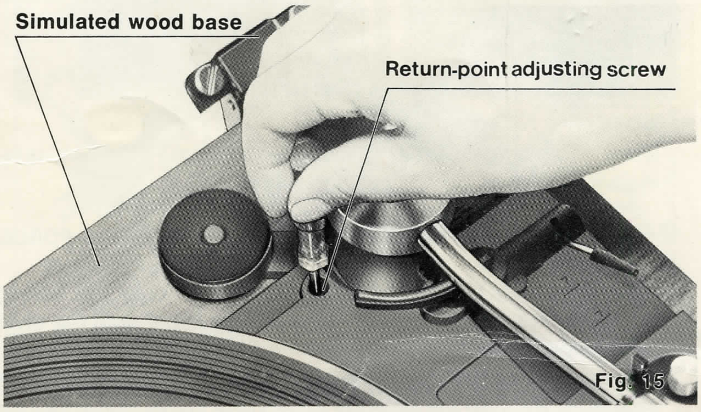


Fig. 15

MAINTENANCE

❶KEEP THE STYLUS AND YOUR RECORDS CLEAN

If the stylus is not kept clean, it will not contact the record groove properly, nor track perfectly, resulting in sound deterioration as well as damage to both the record and the stylus tip.

Be especially careful to clean away all dust and dirt from the stylus tip with a soft brush or blower. DO NOT USE YOUR FINGER. YOU MAY DAMAGE THE STYLUS. We recommend having your stylus checked periodically by Panasonic Dealer. Remember, a worn or damaged stylus can permanently damage your record collection.

❷KEEP THE SHELL TERMINALS CLEAN, TOO.

If the shell terminals are not kept clean, they will not contact well with the tonearm's connectors, resulting in noise, hum or no sound. Clean away periodically all dust and dirt from the shell terminals with a soft cloth. (See Fig. 17)

❸REPLACEMENT OF THE STYLUS

Remove the headshell from the tubular arm by loosening the locking nut.

Carefully grasp the stylus assembly and pull it as shown in the picture.

Being carefully not to touch the stylus tip, push the new one into the opening of the cartridge as far as it will go. (See Fig. 16)

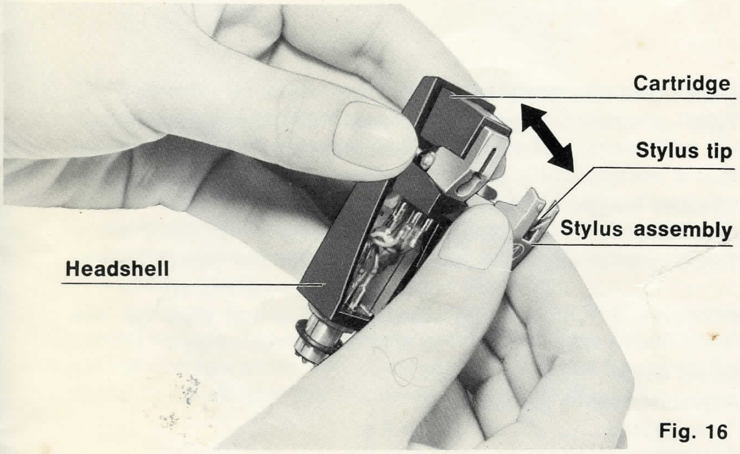


Fig. 16

Replacement stylus is the EPS-35STED.

You can also use the ATS12E replacement stylus which is sold by Audio-Technica U.S., ~~Inc.,~~ 40 30

NOTE:

The stylus will give you many hours of listening pleasure.

To prevent damage to your records it should be replaced at the first sign of wear.

Noise or scratchiness may indicate a worn or damaged stylus.

❹EXCHANGE THE CARTRIDGE

Remove the screws and lead wires as shown in the illustration. Connect the lead wires to the cartridge terminals and install a new cartridge to the headshell in the reverse order. (See Fig. 17)

Also refer to the cartridge manufacturer's instructions.

Lead wires			**Cartridge terminals**	
White	(L +)	→	Left channel	(+)
Blue	(L −)	→	Left channel	(−)
Red	(R +)	→	Right channel	(+)
Green	(R −)	→	Right channel	(−)

❺WIPE THE DUST COVER AND ARM BASE WITH A SOFT, DRY CLOTH

Never use any cleaners containing alcohol, benzine or thinner. To remove stubborn finger prints or grease spots, first disconnect the AC power plug and use a soft cloth dampened with a mild soap and water solution.

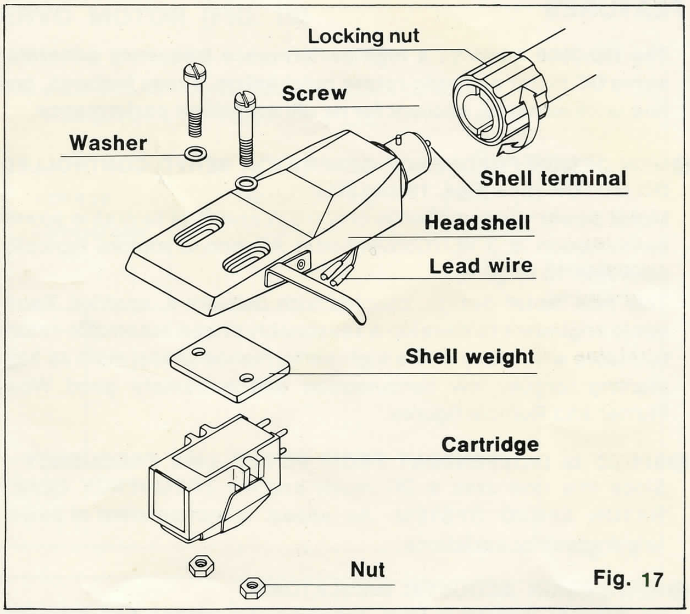


Fig. 17

❻THE PRECISION FREQUENCY GENERATOR MOTOR USED IN THIS UNIT DOES NOT NEED LUBRICATION

It is designed to provide long maintenance-free service.

❼HOW TO REMOVE AND INSTALL THE TURNTABLE PLATTER

The belt is connected to the capstan and the inner drive rim of the turntable platter.

Before removing the turntable platter, release the belt from the capstan. (See Fig. 18)

When reinstalling the turntable platter, lower it over the turntable shaft and then put the belt onto the capstan.

NOTE:

Be careful not to let oil or grease contact the belt.

If grease inadvertently contacts the belt, disconnect the AC power plug and wipe the belt clean with alcohol.

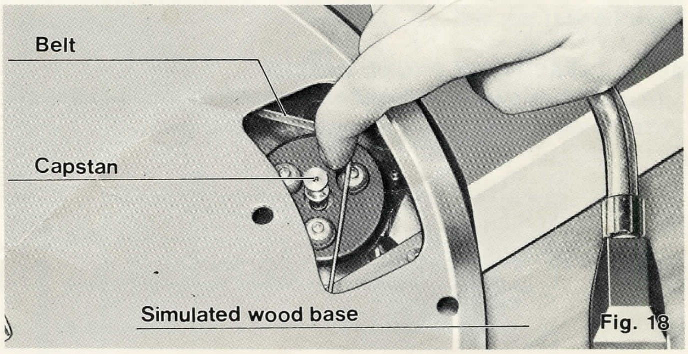


Fig. 18

NOTES

❶Do not grasp or hold the tonearm during operation of the automatic-return mechanism.

❷Clamp the tonearm with the arm clamp when not using the turntable.

Use the stylus cover to protect the stylus tip from damage.

❸Disconnect the AC power plug when not in use.

❹Before detaching or attaching the head shell, be sure to turn the volume control of the receiver or amplifier to "0" position, or to turn off the power switch.

Detaching or attaching of the head shell, with the volume control turned high, may not only result in unpleasant noises, but cause damage to the speakers.

FEATURES

The RD-3600 employs a high-performance frequency generator servo DC motor and auto-return mechanism. These features, and fine workmanship, account for its ultrasensitive performance.

❶NEW DESIGN FREQUENCY GENERATOR SERVO CONTROLLED DC MOTOR (See Figs. 19 and 20.)

Motor power consumption is only 0.5 W and total turntable power consumption is 3 W. (Conventional AC phono motors typically consume 10 to 20 W.)

This new motor design, coupled with belt-drive, enabled Panasonic engineers to develop a reasonably priced automatic-return turntable with many of the high-performance specs, such as high starting torgue, low consumption and extremely good Wow, Flutter and Rumble figures.

❷SPEED IS INDEPENDENT FROM POWER LINE FREQUENCY

Since this unit uses a DC motor and the FREQUENCY GENERATOR SERVO SYSTEM, its speed is independent of power line frequency variations.

❸NEW-DESIGN ACOUSTIC INSULATORS

To prevent vibrations from reaching the platter and tonearm, acoustic insulators composed of springs and high viscosity damping material are used.

❹VISCOUS-DAMPED CUEING DEVICE

This device is viscous-damped so that you can lower the tonearm slowly on the record.

This protects the stylus tip from damage during descent.

❺ANTI-SKATING FORCE CONTROL

No threads or weights, simply turn the knob to correspond with the stylus pressure setting, to obtain perfect compensation of tonearm side-thrust (anti-skating).

❻ELECTRONIC SPEED CHANGE

Many belt-drive designs use a stepped capstan pulley and lever arrangement to change the speed.

This frequency generator servo motor design allows for easy electronic speed change, eliminating a possible source of mechanical trouble.

❼LOW CAPACITANCE PHONO CABLES

To avoid high frequency loss, low capacitance phono cables are used. They are ideal for conversion to CD-4, too.

SPECIFICATIONS

(TURNTABLE SECTION)

Type	FREQUENCY GENERATOR SERVO TURNTABLE, Automatic-return
Driving method	Belt-drive
Motor	DC motor with FREQUENCY GENERATOR SERVO
Turntable platter	Aluminum diecast, 30 cm (12'') diameter
Turntable speeds	33-1/3 and 45 r.p.m.
Speed change method	Electronic change
Wow and flutter	0.06% W.R.M.S. (JIS C5521)
Rumble	−40 dB (DIN 45539A) −65 dB (DIN 45539B)

(GENERAL SECTION)

Power supply	120 V AC 50 or 60 Hz
Power consumption	3 W
Dimensions	13.5 × 42.8 × 34.8 cm (H × W × D) 5-5/16 × 16-55/64 × 13-45/64 inches (H × W × D)
Weight	5.0 kg (11 lbs.)

(TONEARM SECTION)

Type	Universal "S" shaped tubular arm, Static-balanced type, Direct reading stylus pressure adjustment.
Effective length	220 mm (8-21/32'')
Overhang	14 mm (35/64'')
Tracking error angle	Within +3° (at the point 145 mm (5-45/64'') from the center) Within −0.2° at the point 55 mm (2-3/16'') from the center)
Offset angle	22°
Adjustable stylus pressure range	0 to 4 g
Cartridge weight range	3.5 to 9g
Headshell weight	9g (included shell spacer: 1g)

(CARTRIDGE SECTION)

Type	Moving magnetic stereo cartridge
Frequency response	20 to 25,000 Hz
Output voltage	1.7 to 3.4 mV 1 kHz, 5 cm/s. lateral
Channel separation	22 dB at 1 kHz
Channel balance	Within 2 dB at 1 kHz
Load impedance	47 kΩ to 100 kΩ
Stylus pressure	1.75 ±0.25 g
Replacement stylus	EPS-35STED

OPERATING PRINCIPLES OF FREQUENCY GENERATOR SERVO MOTOR (FIG. 19)

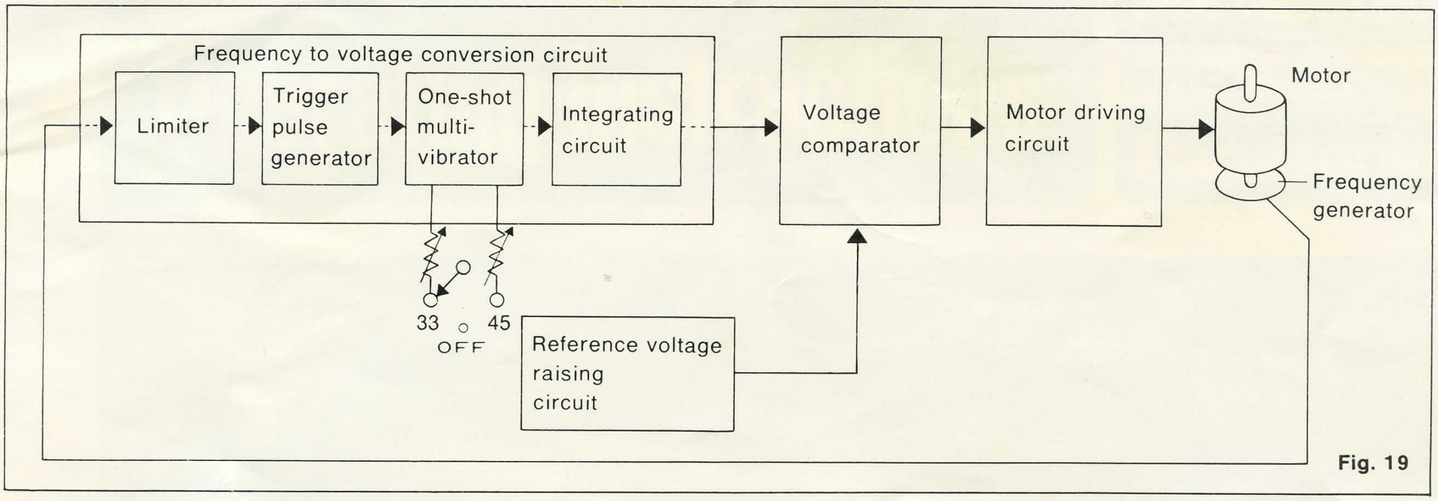


Fig. 19

* * *

The frequency generator is a new feedback control system which keeps the motor constant against any power fluctuations, reducing the amount of wow and flutter to excellent levels. The frequency generator servo-controlled circuits incorporate a high performance IC which is equivalent to 23 transistors. The motor is equipped with frequency detection coils which automatically cause the frequencies to be converted to the DC voltage which is in proportion to the actual rotation of the motor.

This voltage is electronically compared with the reference control voltage. The output of the comparator is the actual motor control voltage which will adjust the motor speed based on the signal supplied from the frequency generator. (Fig. 19)

■ **ELECTRONIC SPEED SWITCHING BY FREQUENCY GENERATOR**

Not only ensures light maneuverability but also prevents performance deterioration, unlike mechanical switching of the conventional belt-drive turntables (using a mechanical-type capstan).

■ **LOAD CHARACTERISTICS (Fig. 20)**

This chart indicates the fluctuation of the rotational speed of the turntable in relation to the stylus pressure.

This unit employs a DC motor with a FREQUENCY GENERATOR SERVO circuit so that the load characteristics are extremely good.

Load characteristics

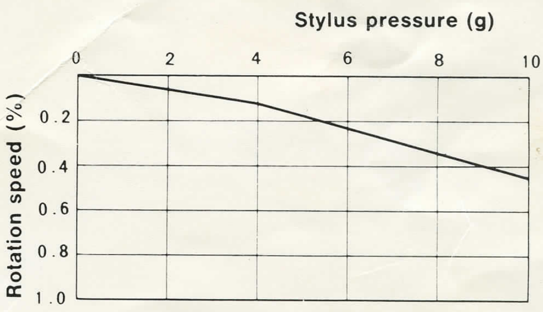


Fig. 20

L R

W + R +

B – G –

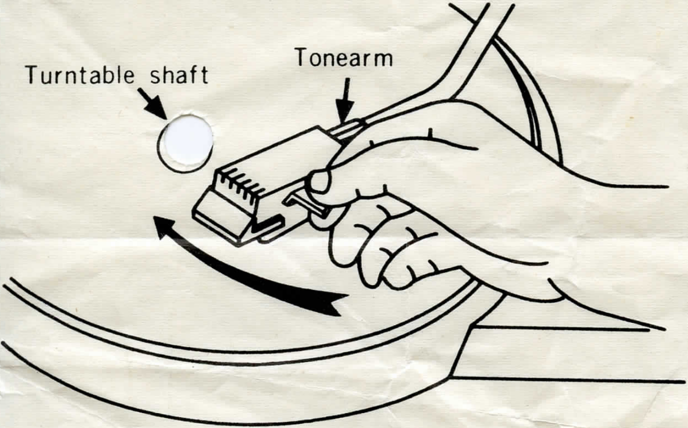
Panasonic Company
Division of Matsushita Electric
Corporation of America
One Panasonic Way, Secaucus,
New Jersey 07094

Matsushita Electric of Hawaii, Inc.
320 Waiakamilo Road, Honolulu,
Hawaii 96817

Printed in Japan

REMARQUE :

Bien que peu probable, il arrive parfois que durant le transit, le mécanisme de l'automatisme s'engage seul. Advenant le cas, il est recommandé de déplacer le bras de lecture latéralement jusque passé le centre, puis tourner le plateau à la main environ une dizaine de fois. Ceci recyclera le mécanisme et évitera tout risque possible de dommage.



NOTE :

In rare cases the automatic mechanism may engage during transportation.

In such cases we recommend that you move the tonearm over the turntable shaft, and rotate the turntable platter about ten times by hand.

This will cause the automatic return mechanism to cycle once and prevent possible damage to the cartridge.